

limbo basi tantum intus rubescente supra puniceo-maculata extus colore pallide viridi; *inflorescentia* foeminea fertili quam mascula multo brevior, pistillodiis numerosissimis varie flexis; spadicis appendice tereti anguste conoidea breviter stipitata reliquam spadicis partem magnopere excedente.

In montibus KACHIN, prope Myitkyina, *Kingii mercenar.!*

Foliorum petioli 2-2.5 dm., pars vaginalis 2.5-3 cm., laminae partitiones .8-1.2 dm. longae .75-1 dm. latae, lobi lateralium basales 4-6 cm. longi, 3-4 cm. lati. *Pedunculus* 1-1.5 cm. longus; spathae tubus 3 cm. longus, 2.5 cm. latus limbi pars triens inferior 7 cm. longa, 9 cm. lata pars summa caudata reflexa basi 3.5 cm. lata, 1.4 dm. longa, sensim apice longe acuminata attenuata. *Inflorescentia* mascula cylindrica rubra 1 cm. longa .7 cm. lata antherarum thecae rimis porosis apertae; pars foeminea alba .5 cm. longa, .85 cm. lata, pistillodiis albis explanatis 1.2-1.5 cm. longis. *Inflorescentia* tota 4 dm. longa, appendice sterili 16 dm. longa.

In addition to the forgoing *Aroides*, an undescribed *Amorphophallus*, which has been included in a *List of Kachin Plants*, published in the *Records of the Botanical Survey of India* as *A. Cruddasianus*, should be here alluded to. Complete material has been sent by our Garden Collector, but for the moment we prefer to withhold a detailed description till living flowers are available, when an accurate account of the coloration can be given. Our collector has sent also a number of living tubers, but during the past season these have sent up leaves only. The tubers alone, however, furnish characters that are sufficiently diagnostic; in place of being oval or depressed, as in other *Amorphophalli* hitherto described, these in *A. Cruddasianus* are long and parsnip-shaped, 6-10 in. long, 2-3 in. across the top.

New species of Entada from Singapore and Borneo.—By H. N. RIDLEY, Esq., M.A., F.L.S., *Director, Botanic Gardens, Singapore.* Communicated by SURGEON-MAJOR D. PRAIN.

The genus *Entada* is represented in the Malay Peninsula by the well-known *E. pursaetha*, and a species very common in Singapore which seems to have been entirely overlooked, although it is very conspicuous here from its very remarkable fruit. To this plant I propose to give the name *Entada spiralis*.

E. SPIRALIS, n. sp. A woody climber with twisted somewhat flattened spiral stems about 3 in. wide and 1-2 in. thick in the thickest part in large specimens; thinner on the outer edge of the curve. *Leaves* alternate three inches long (excluding the tendril), petiole one

inch, much swollen at the base, pinnæ four alternate with petiolules one inch long swollen at base, leaflets alternate rarely opposite, somewhat distant, with very short stalks elliptic to obovate-oblong retuse inaequilateral, 2 to 3 in. long, 1 in. or less wide, dark green unpolished above, glaucous beneath, tendril long, bifid at the apex. *Flower-spikes* axillary 6 in. long, peduncle 2 in. long, swollen at base, rachis purplish-brown covered with short stiff hairs. *Bracts* minute lanceolate hairy. *Flowers* copious densely crowded, shortly pedicellate. *Calyx* campanulate with five teeth, hairy, green. *Corolla*-lobes 4 or 5, oblong obtuse glabrous green, 2 mm. long. *Stamens* 8 to 10, at first white soon becoming yellow, filaments $\frac{1}{4}$ inch long filiform; anthers globose terminal. *Ovary* cylindrical oblong; *style* about as long as the stamens, stigma concave.

The pods are crowded together, three or four being produced on a peduncle. They are contorted into a spiral all coiled together, with five to eleven seeds in each pod. The margins are undulate, and not thickened, and the walls are not woody and remain always green. When ripe the pod breaks up into joints which as they fall delisces.

The seeds vary much in size; they are obscurely triangular in outline or heart-shaped. The larger ones are about two inches long and broad and an inch thick. The testa is chocolate-brown, dull and less woody than in *E. scandens*. The plant is very abundant in Singapore and I have also seen it in Province Wellesley. It usually grows in loose scrub on the edges of woods, or among secondary growth. It constantly throws up shoots from the roots, and is a troublesome plant to eradicate. The shoots are of a purple black colour. The flower-spikes are usually produced immediately after the fall of the leaves, in December or January, but by the time the flowers are open the plant is clad again in leaves. The period of flowering, however, is rather irregular and flowers may often be met with at other seasons. The flowers are fertilized by *Diptera*, chiefly *Syrphidæ*. A good proportion of them possess no pistil, but are entirely male. The seed is dispersed chiefly by monkeys which eat portions of the pods, and throw the seeds about.

The plant is called Akar Beluru by the Malays, as is also *E. Pursaetha* DC.

E. PURSAETHA, DC. described by Dr. Prain (J. A. S. B. lxvi. 2. 242) under the name of *E. scandens* Benth. is a much less common plant in the Malay Peninsula. I have only met with it in Pahang. The plant described and figured by Scheffer under the name *Entada Rumphii* (Nat. Tijds. Ned. Ind. xxxii. t. xvii. xviii. B) seems to me to differ in the form of the pod only. The foliage of *E. Pursaetha* seems to vary very much as does that of *E. spiralis*, and were it not for the fruit I should

certainly refer the plant from Pahang to *E. Rumphii* as the fewer large leaflets quite resemble those of Scheffer's figure; the pod, however, exactly resembles one from the Andamans collected by Dr. Prain and is also exactly like the figure of *E. Pursaetha* given by Scheffer.

In examining specimens of *E. Pursaetha* in the Herbarium of the Botanic Gardens, Singapore, and those lent me kindly by Dr. Prain, I note a form in which the rachis of the inflorescence and the petiole and midrib of the leaf are covered with a rather conspicuous tomentum, reddish in the dry specimen, while the rachis in the other forms is much more glabrous, though by no means completely so. These specimens were collected in the Chittagong Hill Tracts (*Lister* 175), Manipur (*Watt* 6726), Silhet (*Wallich*), and Sikkim (*Thomson*), and probably represent a local form. However, I have seen no fruit.

The species from the Indian region and Malay Peninsula then are *E. Pursaetha* DC, and *E. spiralis* n. sp. Further east we get *E. Rumphii* Scheff. distinguished by its straight pod with oblong not rounded joints, with a straight and not indented thickened margin, oblong seeds, and thinner endocarp. I have also an evidently distinct species collected by Dr. Haviland in Sarawak on two occasions of which I have seen no fruit, which I will describe under the name of *E. borneensis*.

E. BORNEENSIS, n. sp. *Leaves* 4 in. long, with 6-7 pairs of leaflets opposite or in the lower part of the leaf, alternate, oblong retuse, slightly oblique, coriaceous dark shining above, when dry glaucous beneath, petiole $\frac{1}{8}$ th in. long, pubescent, midrib on both sides of the leaf pubescent, 1 in. long, and $\frac{5}{8}$ ths in. wide; tendrils two on each leaf.

Inflorescence, one foot to one foot and a half long covered with closely appressed pubescence. *Flowers* densely crowded, much smaller than in the other species. *Calyx* cupulate with very short teeth, pubescent. *Corolla* 5-lobed, lobes lanceolate acute. *Stamens* ten, filaments as in *E. Pursaetha*; anthers oblong. *Pistil* very rudimentary; female flowers and fruit not seen. Borneo, Sarawak, at Penkulu Ampat (374), Saribas (1563, Haviland).

This species is certainly most nearly allied to *E. spiralis* in its opposite leaflets glaucous beneath, but is very distinct in having from six to seven pairs, smaller, and pubescent on both sides of the midrib, in the very much longer spikes of flowers which are not more than half the size of those of *E. Pursaetha* or *E. spiralis* and the flower spikes being unisexual. Dr. Haviland notes also that all the specimens are male. The corolla in this species opens out quite flat starwise, not merely reflexing its petals as in the other kinds, which gives it a very different appearance. It is to be hoped that further explorations in Sarawak will produce female flowers and fruit.